

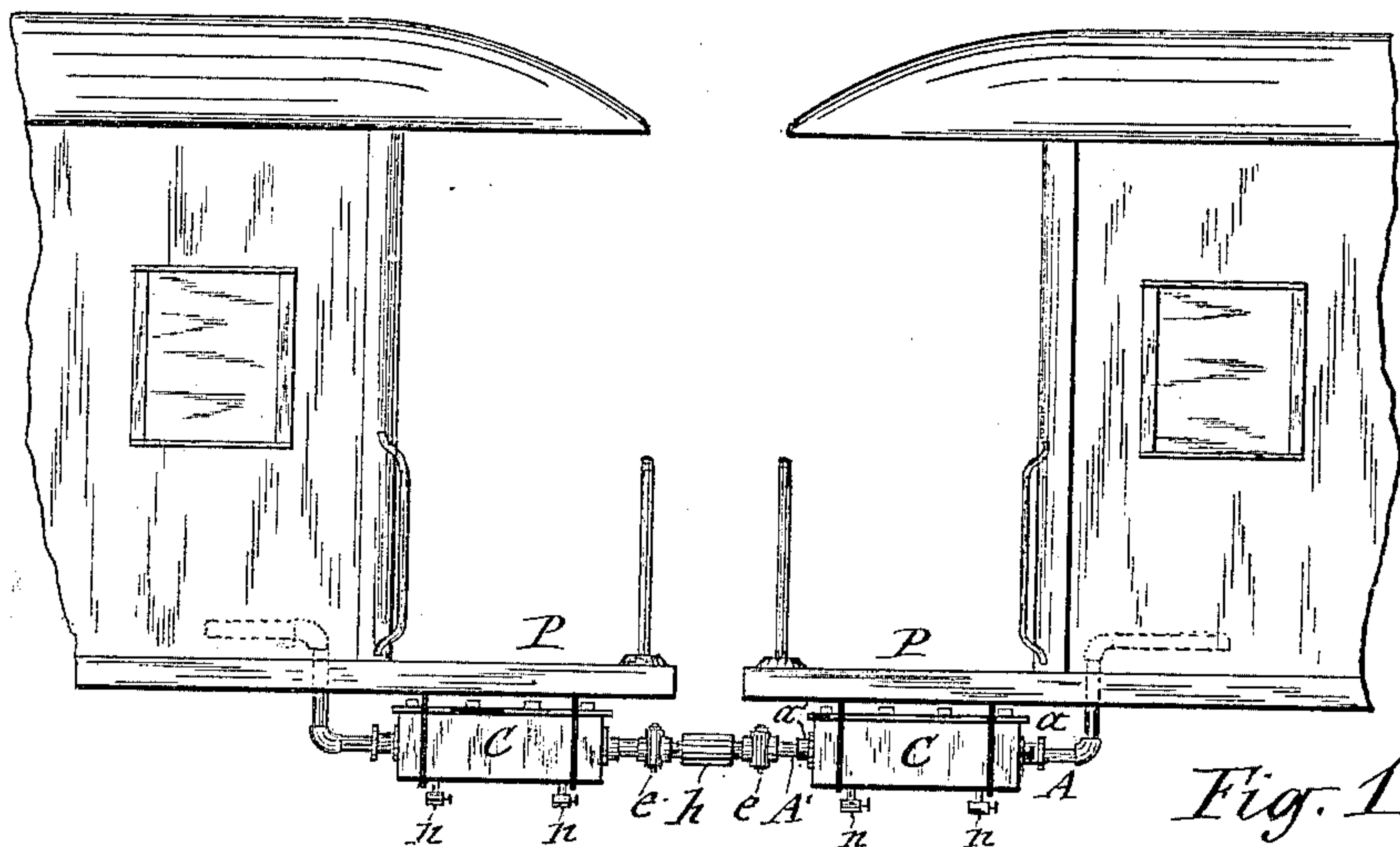
(No Model.)

F. RUPRECHT & F. G. BATES.

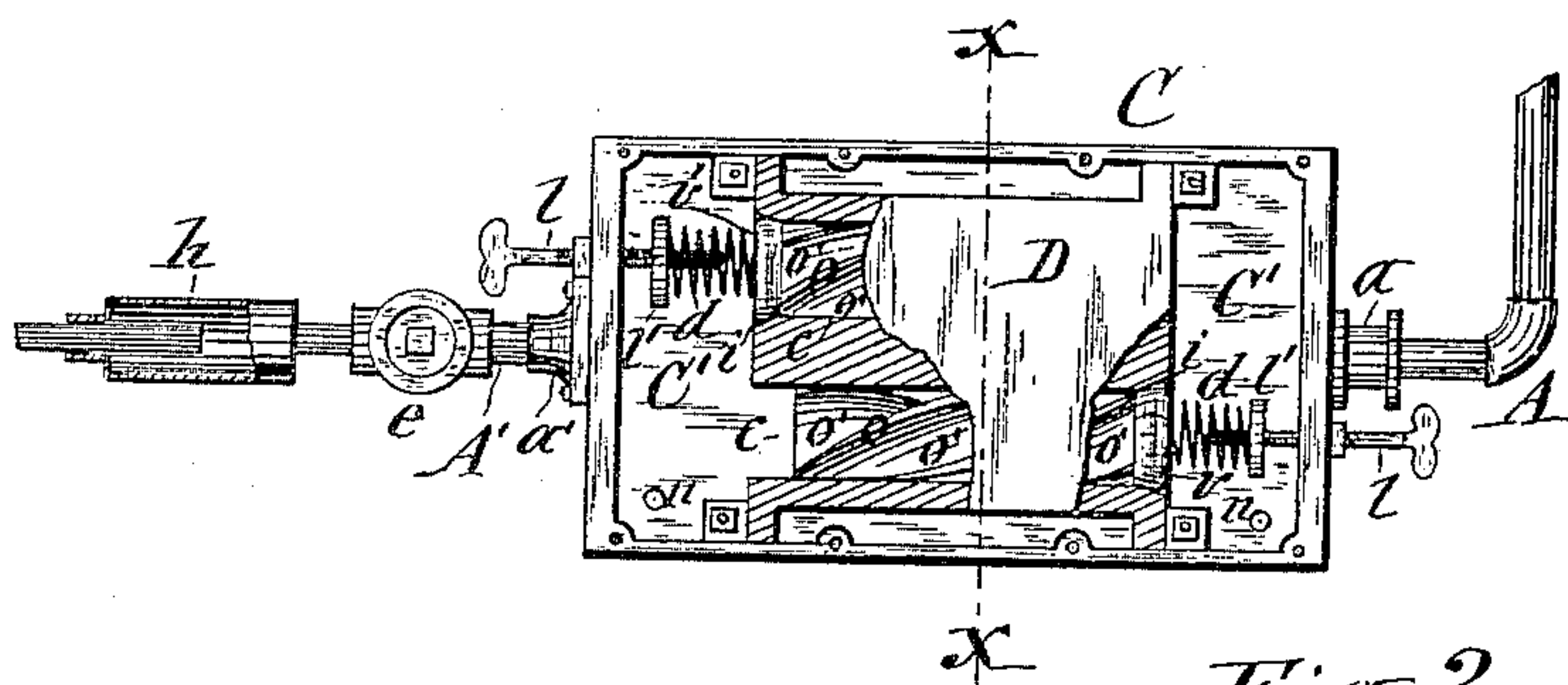
CAR HEATER.

No. 399,633.

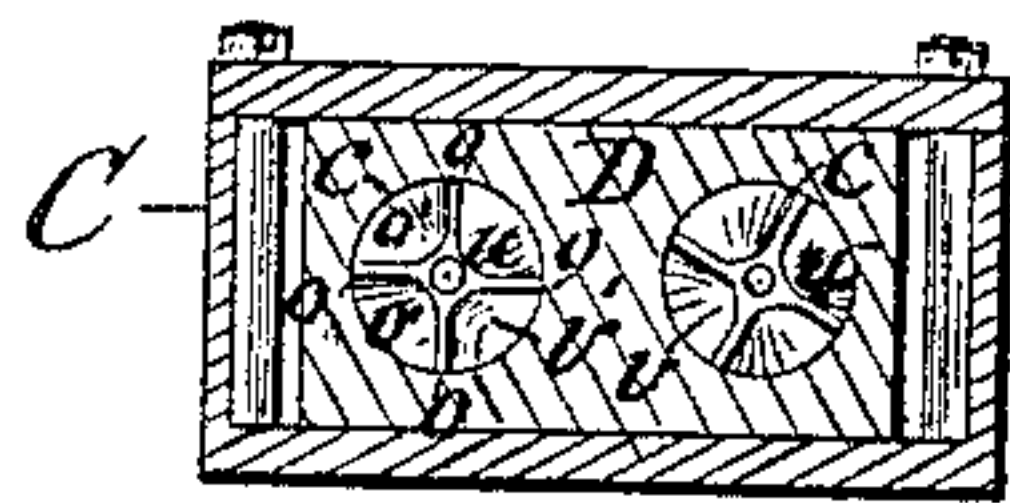
Patented Mar. 12, 1889.



*Fig. 1*



*Fig. 2*



*Fig. 3*

WITNESSES:

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# UNITED STATES PATENT OFFICE.

FRANK RUPRECHT, OF SYRACUSE, NEW YORK, AND FRANCIS G. BATES,  
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## CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 399,633, dated March 12, 1889.

Application filed May 31, 1888. Serial No. 275,563. (No model.)

*To all whom it may concern:*

Be it known that we, FRANK RUPRECHT, a subject of the Emperor of Germany, and FRANCIS G. BATES, a citizen of the United States, residing, respectively, at Syracuse, in the county of Onondaga, State of New York, and Philadelphia, county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Car-Heaters, of which the following is a specification.

This invention is designed to be used in connection with pipes conducting steam through railway-cars for heating the same; and the object of the invention is to close the pipe at opposite ends of the car automatically with the disconnecting of the said car from the train; and to that end our invention consists in the novel construction and combination, with two sections of the car-heater pipe, of a valve-case interposed and connected to said sections and valves arranged conversely in relation to each other in the case and held mechanically in closed position under different degrees of resistance, all as hereinafter more fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of the end portions of two adjacent cars equipped with our invention. Fig. 2 is a detached enlarged top plan view of the valve-case without its cover and a portion of the interior broken away to illustrate the form and arrangement of the valves and their seats; and Fig. 3 is a transverse section on line *x x*, Fig. 2.

Similar letters of reference indicate corresponding parts.

C represents a valve-case secured to the car in any suitable position, though preferably under the platform P on the end of the car, as shown in Fig. 1 of the drawings. Said valve-case is provided at the centers of its opposite ends with pipe attachments *a a'*, and is interposed and connected to the steam-pipe sections A A', one of which leads to the radiators in the car, and the other receives steam either direct from the engine connected to the car or from an intervening car or cars. The other pipe-section, A', connects, as hereinafter described, with a similar valve-case, C, se-

cured to the adjacent car. The interior of the case C is provided at opposite ends with two compartments, C' C', formed by a frame, D, extended across the case and secured in position in any suitable and well-known manner.

Longitudinally through the frame D, at opposite side of the longitudinal central line, are extended channels *c c*, which thus connect the two compartments C' C', said channels being each formed with a valve-seat, *i*, at one end and converse to that of the other channel. In the channels *c c* are placed longitudinally-movable valves *v v'*, disposed reverse in relation to each other, and provided with bearings by which they rest on the seats *i i* when the valves are in their closed position. The shanks *u* of the valves are formed with spiral flanges *o* and intervening spiral grooves *o'*, so that the steam can enter the channels *c c*, and if under sufficient pressure to lift the valves from their seats the valves receive a rotary motion, and thus change their positions on their seats, and thereby cause the same to wear evenly. These valves are held mechanically normally in their closed positions under different degrees of resistance, preferably by means of spiral springs *d d*, held against the closing ends of the valves by adjusting-screws *l l*, working in screw-threaded apertures in the end plates of the valve-case C, and provided at the inside of said case with a collar, *l'*, against which one end of the spring *d* bears. By means of said screws the tension of the springs is to be so adjusted that the valve *v'*, which has to resist the back-pressure of steam from the pipe A leading into the car, receives greater pressure from its spring *d* than the valve which has to resist the pressure of the steam received from the engine. The effect of this arrangement of the valves *v v'* is as follows: When the car is connected at opposite ends to a train and the steam is allowed to pass from the locomotive through the pipe A' into the chamber C, the valve *v* will be forced open by said current of steam while the spring *d* holds the valve *v'* closed, and thus the steam is compelled to pass from the chamber C through the pipe A to the radiators in the car, and from thence the



steam passes in the same manner through the chamber C on the opposite end of the car and into the radiators in the adjacent car. It will be observed that this arrangement is adapted to operate with either end of the car toward the engine. *n n* denote drip-faucets for letting the water of condensation out of the valve-chamber. The pipe-section A', which projects from the end of the valve-chamber C facing from the car, is provided with a stop-cock, *e*, by which to cut off the steam completely when desired, and to that end of said pipe-section is connected a telescopic pipe-coupling, *h*, by which to connect said pipe-section with a pipe projecting from a valve-case, C, connected to the end of the adjacent car.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination with two sections of a car steam-heater pipe, a valve-case interposed and connected at opposite ends to said sections and valves arranged conversely in relation to each other in the case and held mechanically in closed positions under different degrees of resistance, as set forth.

2. In combination with two sections of a car steam-heater pipe, a valve-case interposed and connected at opposite ends to said sections, valves arranged conversely in relation to each other in the case, and springs opposed to the movements of the valves from their seats, as set forth.

3. In combination with the pipe-sections A A', the case C, provided with the pipe attachments *a a'* at the centers of its ends, and having thereat the compartments C' C', intervening longitudinal channels *c c*, connecting said compartments at opposite sides of the longitudinal central line of the case, and each provided with a valve-seat reverse from that of the other, valves *v v'*, movable in said channels and closing against the aforesaid seats, and springs *d d*, adjustable in tension and pressing the valves onto their seats, substantially as described and shown.

4. In combination with the pipe-sections A A', the case C, interposed and connected to said pipe-sections, compartments C' C' in opposite ends of the case, longitudinal channels *c c*, connecting the compartments, reversely-disposed valves *v v'* in said channels, springs *d d*, holding the valves in their closed position, the stop-cock *e*, connected to the pipe-section A', and the telescopic coupling *h* on said pipe-section, substantially as described and shown.

In testimony whereof we have hereunto signed our names, in the presence of two witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 26th day of May, 1888.

FRANK RUPRECHT.  
FRANCIS G. BATES.

Witnesses:

J. J. LAASS,  
C. L. BENDIXON.